IEEE P802.11  
Wireless LANs

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| **Resolution to CID 24081** |
| **Date:** 2020-03-12 |

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Abstract

This submission proposes resolution for the following CID submitted to 1st SB for P802.11ax (**1 CID**):

* 24081

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGax Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGax Editor: Editing instructions preceded by “TGax Editor” are instructions to the TGax editor to modify existing material in the TGax draft. As a result of adopting the changes, the TGax editor will execute the instructions rather than copy them to the TGax Draft.***

# 26.11.2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 24081 | 429.15 | The parameter is no more a flag to show whether the transmission is for uplink or not. The name is misleading. This parameter is used at the 3rd party STA whether it can perform the intra-PPDU power saving. | Change "UPLINK\_FLAG" to such as "ALLOW\_DOZE\_FLAG" throughout the draft.  There are two occurrences in 8.3.5.2.2, 1 occurrence in 26.2.2, 1 occurrence in 26.2.3, 2 occurrences in 26.11.1, 5 occurrences including the subclause title in 26.11.2, 4 occurrences in 26.14.1, 3 occurrences in 26.15.2, 2 occurrences in Table 27-1, 1 occurrence in Table 27-18, and 1 occurrence in Table 27-20. That's it. | Agree in principle.  See the instructions to the TGax editor in doc. 11-20/0447r0. |
|  |  |  |  |  |

**Discussion**

The commenter is referring to 26.11.2 shown below and saying that the UPLINK\_FLAG is no more just a flag to show whether the PPDU is for uplink.



The above red underlined part was added to have a 3rd party non-AP STA operating in intra-PPDU power save mode stay awake and process the HE ER SU PPDU sent from a non-AP STA to an AP, which results in the 3rd party non-AP STA to set a NAV and protecting the frame exchange using HE ER SU PPDUs.

The related part is 26.14.1.



It is from an AP to a non-AP STA other than the recipient, so the recipient can skip decoding it.

Original intention: It is from a non-AP STA to an AP, so the recipient which is a 3rd party non-AP STA can skip decoding it.

*But this may fail to protect the frame exchange using HE ER SU PPDUs due to mismatch of the coverage areas, and thus, the exception in 26.11.2 was added.*

The PPDU was sent in an unsupported MCS, so the recipient cannot decode anyway and can skip decoding it.

There is no more MPDUs to decode in the PPDU, so the recipient which can skip the remainder of the it.

However, for intuitive understanding, it may be better to somehow keep the “uplink” flavour in the flag name. So, here, it is proposed to change the flag name from UPLINK\_FLAG to UL\_OR\_MAY\_DOZE\_FLAG.

TGax Editor: Change the last paragraph in 8.3.5.2.2 of P802.11ax D6.0 as follows:

##### 8.3.5 PHY SAP detailed service specification

##### 8.3.5.2 PHY-DATA.request

##### 8.3.5.2.2 Semantics of the service primitive

…

The STA\_INDEX parameter (identified as the STA\_ID parameter; see STA\_ID parameter in Table 27-1 (TXVECTOR and RXVECTOR parameters) and 26.11.1 (STA\_ID)) is present for an HE MU PPDU; otherwise, this parameter is not present. If the TXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG is 0, this parameter indicates the STA or group of STAs that is the recipient of an RU to which the accompanying DATA octet applies. If the TXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG is 1, this parameter indicates the STA that is the transmitter of an RU to which the accompanying DATA octet applies.

TGax Editor: Change the first paragraph in 26.2.2 of P802.11ax D6.0 as follows:

##### 26.2.2 Intra-BSS and inter-BSS PPDU classification

A STA shall classify a received PPDU as an inter-BSS PPDU if at least one of the following conditions is true:

* …
* The PPDU is either a VHT MU PPDU or an HE MU PPDU with the RXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG equal to 0 and the STA is an AP.
* …

…

TGax Editor: Change the 7th paragraph in 26.2.2 of P802.11ax D6.0 as follows:

##### 26.2.3 SRG PPDU identification

…

An HE SU PPDU, HE ER SU PPDU or HE MU PPDU that is an inter-BSS PPDU and that is received with the RXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG equal to 1 is an SRG PPDU if the bit in the SRG Partial BSSID Bitmap field that corresponds to the numerical value of bits [39:44] of the RA field of any correctly received frame from the PPDU is 1.

…

TGax Editor: Change 26.11.1 and 26.11.2 of P802.11ax D6.0 as follows:

##### 26.11 Setting TXVECTOR parameters for an HE PPDU

##### 26.11.1 STA\_ID

Each parameter STA\_ID in the TXVECTOR identifies the STA or group of STAs that is the recipient of an RU in the HE MU PPDU transmitted with the TXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG set to 0. An individually addressed RU is an RU addressed to either an associated non-AP STA or a TDLS peer STA and the parameter STA\_ID for that RU is set to the 11 LSBs of the AID of the STA receiving the PSDU contained in that RU. If an RU is intended for one or more unassociated non-AP STAs, then the parameter STA\_ID for that RU is set to 2045. If an RU is intended for no user, then the parameter STA\_ID for that RU is set to 2046. If an RU is intended for an AP (i.e., the TXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG is 1), then the parameter STA\_ID contains only one element that is set to the 11 LSBs of the AID of the non-AP STA transmitting the PPDU. If an RU is intended for multiple STAs for MU-MIMO then multiple STAs identified by STA-IDs in the parameter STA\_IDs will use the same resource unit (see 26.5.2 (UL MU operation)). If an RU is intended for multiple associated STAs and carries a single A-MPDU then the parameter STA\_ID is set as follows:

* For an AP with dot11MultiBSSIDImplemented equal to false, if the RU is intended for more than one associated STA in the BSS that is not a recipient of an individually addressed RU, the parameter STA\_ID is set to 0.
* For an AP with dot11MultiBSSIDImplemented equal to true, if the RU is intended for more than one associated STA in any of its BSSs that is not a recipient of an individually addressed RU, the parameter STA\_ID is set to 0 for transmitted BSSID or to the value of the BSSID Index field corresponding to that BSS (see 9.4.2.73 (Multiple BSSID-Index element)) for a nontransmitted BSSID. The number of such elements shall not exceed the maximum number of BSSs of the multiple BSSID set.
* For an AP with dot11MultiBSSIDImplemented equal to true, if the RU is intended for more than one associated STA on any of its BSSs, the parameter STA\_ID is set to 2047.

The parameter STA\_ID values between 2008 and 2044 are reserved.

A non-AP STA shall not transmit an HE MU PPDU where the TXVECTOR parameter STA\_ID includes more than one entry in the range 1 to 2007.

NOTE—The parameter STA\_ID is not present in PPDUs other than an HE MU PPDU.

##### 26.11.2 UL\_MAY\_DOZE\_FLAG

An HE STA transmitting an HE SU PPDU, HE ER SU PPDU or HE MU PPDU sets the TXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG as follows:

* A STA transmitting an HE PPDU containing frames that are addressed to an AP shall set the TXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG to 1 unless the HE PPDU is an HE ER SU PPDU with the TXVECTOR parameter TXOP\_DURATION set to UNSPECIFIED and contains an RTS or CTS frame in which case the STA may set the TXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG to 0.
* Otherwise, the HE STA shall set the TXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG to 0.

TGax Editor: Change the 3rd paragraph in 26.14.1 of P802.11ax D6.0 as follows:

##### 26.14 Power management

##### 26.14.1 Intra-PPDU power save for non-AP HE STAs

…

A non-AP HE STA that is in intra-PPDU power save mode may enter the doze state or become unavailable until the end of a PPDU currently being received if one of the following conditions is met:

* The PPDU is an HE MU PPDU where the RXVECTOR parameter BSS\_COLOR is the BSS color of the BSS in which the STA is associated, the RXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG is 0 and the RXVECTOR parameters STA\_ID do not include the identifier of the STA or the broadcast identifier(s) intended for the STA and the BSS Color Disabled subfield is 0 in the most recently received HE Operation element from the AP with which it is associated.
* The PPDU is an HE MU PPDU, HE SU PPDU or HE ER SU PPDU and one of the following conditions are true:
  + The RXVECTOR parameter BSS\_COLOR is the BSS color of the BSS in which the STA is associated, the RXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG is 1 and the BSS Color Disabled subfield is 0 in the most recently received HE Operation element from the AP with which it is associated.
  + The RXVECTOR parameter BSS\_COLOR is the BSS color of the BSS in which the STA is associated, the RXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG is 0 and a PHY-RXEND.indication(UnsupportedRate) primitive was received and the BSS Color Disabled subfield is 0 in the most recently received HE Operation element from the AP with which it is associated.
* The PPDU is an HE TB PPDU where the RXVECTOR parameter BSS\_COLOR is the BSS color of the BSS in which the STA is associated and the BSS Color Disabled subfield is 0 in the most recently received HE Operation element from the AP with which it is associated.
* The PPDU is a VHT PPDU where the RXVECTOR parameter PARTIAL\_AID is the BSSID[39:47] of the BSS in which the STA is associated or any of the other BSSs in the same multiple BSSID set or co-hosted BSSID set to which its BSS belongs and the RXVECTOR parameter GROUP\_ID is 0.
* The PPDU is a PPDU with:
  + An A-MPDU including TA or RA equal to either the BSSID of the BSS in which the STA is associated or any of the other BSSs in the same multiple BSSID set or co-hosted BSSID set to which its BSS belongs and,
  + The RA is not the individual MAC address of the STA or the group address(es) of the STA.
* The PPDU is either an HE MU PPDU with the RXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG set to 0 or a VHT MU PPDU containing an A-MPDU with
  + The RA(s) in the A-MPDU is (are) equal to the STA’s individual address and,
  + The STA has received in the A-MPDU at least one MPDU delimiter with EOF equal to 1 and with MPDU length field equal to 0.

…

TGax Editor: Change the NOTE after the 6th paragraph in 26.15.2 of P802.11ax D6.0 as follows:

##### 26.15.2 PPDU format selection

…

A non-AP STA, TDLS STA or IBSS STA shall not transmit a 20 MHz HE MU PPDU with just a 106-tone RU to a peer STA unless it has received from the peer STA an HE Capabilities element with the Rx Partial BW SU In 20 MHz HE MU PPDU subfield in the HE PHY Capabilities Information field equal to 1.

NOTE—A non-AP STA transmitting an HE MU PPDU sets the TXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG to 1 if the PPDU is sent to the AP and to 0 if the PPDU is sent to a TDLS STA (see 26.11.2 (UL\_OR\_MAY\_DOZE\_FLAG)). The HE MU PPDU format enables the non-AP STA to include its AID (i.e., transmitter’s AID if the UL\_OR\_MAY\_DOZE\_FLAG is 1 and the receiver’s AID if the UL\_OR\_MAY\_DOZE\_FLAG is 0) in the PHY header of the PPDU and its use is out of scope of the standard.

…

TGax Editor: Change Table 27-1 in 27.2.2 of P802.11ax D6.0 as follows:

##### 27.2.2 TXVECTOR and RXVECTOR parameters

…

**Table 27-1—TXVECTOR and RXVECTOR parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Condition** | **Value** | **TXVECTOR** | **RXVECTOR** |
| … | … | … | … | … |
| UL\_OR\_MAY\_DOZE\_FLAG | FORMAT is HE\_SU or HE\_ MU | Set to 1 if the PPDU is addressed to an AP Set to 0 otherwise. | Y | Y |
| FORMAT is HE\_ER\_SU | Set to 0 if the PPDU is not addressed to an AP, or if the PPDU is addressed to an AP and meets the exception in 26.11.2 (UL\_OR\_MAY\_DOZE\_FLAG).  Set to 1 otherwise. | Y | Y |
| Otherwise | Not present | N | N |
| … |  |  |  |  |

TGax Editor: Change Table 27-18 and Table 28-20 in 27.2.2 of P802.11ax D6.0 as follows:

##### 27.3.11.7.2 Content

…

**Table 27-18—HE-SIG-A field of an HE SU PPDU and HE ER SU PPDU**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two Parts of HE-SIG-A** | **Bit** | **Field** | **Number of bits** | **Description** |
| HE-SIG-  A1 | … | … | … | … |
| B2 | UL/DL | 1 | Indicates whether the PPDU is sent UL or DL. Set to 1 if the PPDU is addressed to an AP. Set to 0 otherwise. See the TXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG. |
| … | … | … | … |
| HE-SIG-  A2 (HE  SU  PPDU) or HE-SIG-  A3 (HE  ER SU  PPDU) | … | … | … | … |

…

**Table 27-20—HE-SIG-A field of an HE MU PPDU**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two Parts of**  **HE-SIG-A** | **Bit** | **Field** | **Number of bits** | **Description** |
| HE-SIG-A1 | B0 | UL/DL | 1 | Indicates whether the PPDU is sent UL or DL. Set to 1 if the PPDU is addressed to an AP. Set to 0 otherwise. See the TXVECTOR parameter UL\_OR\_MAY\_DOZE\_FLAG.  NOTE—The TDLS peer can identify the TDLS frame by To DS and From DS fields in the MAC header of the frame. |
| … | … | … | … |
| HE-SIGA2 | … | … | … | … |

…

TGax Editor: After the above changes, update the table of Contents of P802.11ax D6.0.